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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/993,092	11/06/2001	Jens Wildhagen	450117-03589	7465
20999	7590	12/19/2005	EXAMINER	
FROMMER LAWRENCE & HAUG 745 FIFTH AVENUE- 10TH FL. NEW YORK, NY 10151			FAULK, DEVONA E	
			ART UNIT	PAPER NUMBER
			2644	

DATE MAILED: 12/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/993,092

Applicant(s)

WILDHAGEN, JENS

Examiner

Devona E. Faulk

Art Unit

2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-13,15-23,25 and 26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 15-23 is/are allowed.
- 6) ☒ Claim(s) 1,4-7,25 and 26 is/are rejected.
- 7) ☒ Claim(s) 8-13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. The applicant has amended claim 1 to its state of allowability as indicated by a notice of allowance sent by an examiner who initially examined the case. The current examiner has however, found prior art that would lend itself to a 103 type rejection for claim 1.
2. Claims 15-23 are in allowable form.
3. Claims 2,3,14, 24 are cancelled.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. **Claim 7** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 7 recites "wherein an attenuation factor of a respective subband is determined by dividing the signal component of the subband of the audio signal corresponding to the subband of the stereo audio signal by the noise component of the subband of the stereo difference signal". The specification recites " an attenuation factor of a respective subband is determined by dividing the signal component corresponding to the subband of the audio signal by the noise component of the subband of the stereo difference signal" (page 5, lines 20-24).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 1,4-6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishida et al. (U.S. Patent 5,253,299) in view of Druyvesteyn et al. (U.S. Patent 5,161,210) in further view of Short (U.S. 5,068,896).

Regarding **claim 1**, Ishida discloses a method to de-noise a stereo signal (abstract) comprising a stereo sum signal and a stereo difference signal, characterized by

a frequency selective stereo to mono blending (Figure 3);

Ishida discloses dividing the stereo difference signals into sub-bands (column 2, lines 62-66) and teaches of reproducing a stereo signal so that a noise component can be eliminated over the entire frequency band, having a natural stereo sense (column 10, lines 57-62) but fails to specifically teach of dividing the stereo difference signals based on the masking effect of the human auditory system which refers to the masking properties of the human ear. This was well known in the art as taught by Druyvesteyn.

Druyvesteyn discloses that dividing an audio signal band into a plurality of sub-bands whose bandwidths approximately correspond with the bandwidths of the critical bands of the human auditory system and masking effect is well known in the art (column

4, lines 43-55). It would have been obvious to modify Ishida by dividing the stereo difference signals into sub-bands with bandwidths that correspond to the critical bands of the human auditory system in order to make noise inaudible to the human auditory system (column 4, line 43).

Ishida as modified by Druyvesteyn fails to disclose but Short teaches of using noise included in the stereo audio signal as a probe signal and an audio component of the audio signal as a mask signal (column 2, lines 22-26).

It would have been obvious to modify Ishida as modified by Druyvesteyn by using noise included in the stereo audio signal as a probe signal and an audio component of the audio signal as a mask signal as taught by Short in order to better reduce noise without reducing stereo separation.

Regarding **claims 4 and 5**, Ishida as modified by Druyvesteyn and Short discloses wherein a number of subbands is determined according to the properties of the human auditory system and wherein a width of a respective subband is determined according to properties of the human auditory system (See above apropos rejection of claim 1; The examiner takes official notice that based on the human auditory system, the human ear divides the discernable frequency range into 24 critical bands; width of claim 5 is implicit).

Regarding **claim 6**, Ishida as modified by Druyvesteyn and Short discloses wherein every subband of the stereo difference signal which noise component lies above a signal component of a subband of the audio signal corresponding to that of the stereo difference signal is attenuated so that the noise component of the subband of the

stereo difference lies below the respective absolute value of masking. (See above apropos rejection of claim 1, implicit in the masking effect of the human auditory system).

Regarding **claim 26**, Ishida as modified by Druyvesteyn and Short discloses further comprising determining the frequency selectivity by dividing the stereo difference signal into subbands (Ishida, Figure 3; abstract; column 2, lines 63-66).

8. **Claim 25** is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishida et al. (U.S. Patent 5,253,299) in view of Druyvesteyn et al. (U.S. Patent 5,161,210) in further view of Short (U.S. 5,068,896) in further view of Laroche (U.S. 6,405,163).

Regarding **claim 25**, Ishida as modified by Druyvesteyn and Short discloses the method steps as defined in claim 1 as stated apropos of claim 1.

Ishida as modified by Druyvesteyn and Short fail to disclose but Laroche teaches of a computer product comprising computer program means (claims 12).

It would have been obvious to have the method as taught by Ishida as modified by Druyvesteyn and Short implemented using a computer program as taught by Laroche in order to more efficiently perform the noise reduction.

Claim Objections

5. **Claims 8-13** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Allowable Subject Matter

8. **Claims 15-23** are in allowable form. See above Response to Remarks.

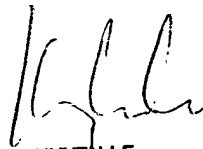
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Devona E. Faulk whose telephone number is 571-272-7515. The examiner can normally be reached on 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DEF


HUYEN LE
PRIMARY EXAMINER